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       Evans, Ian
       De Bolle, Miquel
       Ray, John
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Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His 50 60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Lys Lys 65 70 75 80

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cca Pro	gga Gly	cag Gln 95	aag Lys	ttg Leu	tgc Cys	caa Gln	agg Arg 100	cca Pro	agt Ser	Gly ggg	aca Thr	tgg Trp 105	tca Ser	gga Gly	gtc Val	399
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gca Ala 125	cga Arg	cat His	gga Gly	tct Ser	tgc Cys 130	aac Asn	tat Tyr	gtc Val	ttc Phe	cca Pro 135	gct Ala	cac His	aag Lys	tgt Cys	atc Ile 140	495
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Leu Ile Leu Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly
15 20 25

Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val

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	Gly													gcc Ala		255
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Asp	Asn 50	Gln	Cys	Lys	Ser	Trp 55	Glu	Gly	Ala	Ala	His 60	Gly	Ala	Cys	His	
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7

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Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys
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ctg atc ctt ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga 159 Leu Ile Leu Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly 15 20 25
gaa cta tgc gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac 207 Glu Leu Cys Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn 30 35 40
acg gga cat tgt gac aac caa tgt aaa tca tgg gag ggt gcg gcc cat 255 Thr Gly His Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His 45 50 55 60
gga gcg tgt cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc 303 Gly Ala Cys His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe 65 70 75
aat tgt aaa aaa gcc gaa aag ctt gct caa gac aaa ctt aaa gcc gaa 351 Asn Cys Lys Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu 80 85 90
caa ctc gct caa gac aaa ctt aat gcc caa aag ctt gac cgt gat gcc 399 Gln Leu Ala Gln Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala 95 100 105
aag aaa gtg gtt cca aac gtt gaa cat ccg atc gga aag agg cag aag 447 Lys Lys Val Val Pro Asn Val Glu His Pro Ile Gly Lys Arg Gln Lys 110 115 120
ttg tgc caa agg cca agt ggg aca tgg tca gga gtc tgt gga aac aat 495 Leu Cys Gln Arg Pro Ser Gly Thr Trp Ser Gly Val Cys Gly Asn Asn 125 130 135 140
aac gca tgc aag aat cag tgc att aga ctt gag aaa gca cga cat gga 543 Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly 145 150 155

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<223> Description of Artificial Sequence: Synthetic
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Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys 35 40 45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His 50 60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Lys 65 70 75 80

Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu Ala Gln
85 90 95

Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala Lys Lys Val Val

Pro Asn Val Glu His Pro Ile Gly Lys Arg Gln Lys Leu Cys Gln Arg 115 120 125

Pro Ser Gly Thr Trp Ser Gly Val Cys Gly Asn Asn Ala Cys Lys 130 135

Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr 145 150 155 160

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<210> 17

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<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic sequence

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gaa cta tgc gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac 207 Glu Leu Cys Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn 30 35 40
acg gga cat tgt gac aac caa tgt aaa tca tgg gag ggt gcg gcc cat 255 Thr Gly His Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His 45 50 55 60
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aat tgt gcc agt act act gtg gat cac caa gct gat gtt gct gcc acc 351 Asn Cys Ala Ser Thr Thr Val Asp His Gln Ala Asp Val Ala Ala Thr 80 85 90
aaa act atc gga aag agg cag aag ttg tgc caa agg cca agt ggg aca 399 Lys Thr Ile Gly Lys Arg Gln Lys Leu Cys Gln Arg Pro Ser Gly Thr 95 100 105
tgg tca gga gtc tgt gga aac aat aac gca tgc aag aat cag tgc att Trp Ser Gly Val Cys Gly Asn Asn Ala Cys Lys Asn Gln Cys Ile 110 115 120
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gga gcg tgt cat gtg cgt aat ggg aaa cac atg tgt ttc tgt tac ttc 303 Gly Ala Cys His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe 70 65 316 aat tgt tga gctc Asn Cys <210> 20 <211> 78 <212> PRT <213> Artificial Sequence <220> <223> Description of Artificial Sequence: Synthetic sequence <400> 20 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His 50 Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys <210> 21 <211> 14 <212> PRT <213> Artificial Sequence <220> <223> Description of Artificial Sequence: Linker peptide <400> 21 Ser Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu 5 1 <210> 22 <211> 12 <212> PRT <213> Artificial Sequence <220> <223> Description of Artificial Sequence: Linker peptide

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<223> Description of Artificial Sequence: Linker peptide

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<210> 24

<211> 28

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<213> Artificial Sequence

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<223> Description of Artificial Sequence: Linker
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1 5 10 15

Leu Ala Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp 20 25

<210> 25

<211> 28

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Linker
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Ile Gly Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg 20 25

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<211> 52

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Linker
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<400> 26

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Ala Gln Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala Lys Lys
20 25 30

Val Val Pro Asn Val Glu His Pro Ile Gly Lys Arg Ile Gly Lys Arg 35 40 45

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Ile Gly Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg 20 25

<210> 28

<211> 29

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<400> 28

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Leu Lys Leu Ala Gly Asp Val Glu Ser Asn Pro Gly Pro

<210> 29

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<210> 31 <211> 144 <212> PRT

<220>

<400> 31

<213> Artificial Sequence

sequence

<223> Description of Artificial Sequence: Synthetic

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tgt gac aac Cys Asp Asn 50	Gln Cys											191
cat gtg cgt His Val Arg 65												239
aac gcg gcc Asn Ala Ala 80												287
tgc caa agg Cys Gln Arg												335
gca tgc aag Ala Cys Lys	_	-	_				_	_				383
tgc aac tat Cys Asn Tyr 130	_	-		_	-		-				-	431
taa taggagc	tc											443
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Lys Ala Ser 35	Lys Thr	Trp Ser	Gly 40	Asn	Суз	Gly	Asn	Thr 45	Gly	His	Cys	
Asp Asn Gln 50	Cys Lys	Ser Trp 55	Glu	Gly	Ala	Ala	His 60	Gly	Ala	Cys	His	
Val Arg Asn 65	Gly Lys	His Met 70	Cys	Phe	Cys	Tyr 75	Phe	Asn	Cys	Ser	Asn 80	

Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu Gln Lys Leu Cys

85

Gln Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys 135 <210> 34 <211> 437 <212> DNA <213> Artificial Sequence <223> Description of Artificial Sequence: Synthetic sequence <220> <221> CDS <222> (3)..(428) <400> 34 cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt 47 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc 95 Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat 143 Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His 35 tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt 191 Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt tcc 239 His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser 70 aac gcg gcc gac gag gtg gct acc cca gag gac cag aag ttg tgc caa 287 Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Gln Lys Leu Cys Gln 85 335 agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca tgc Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys 100 105 aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc aac 383 Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn 120

428 tat cgt ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys 135 437 taggagctc <210> 35 <211> 141 <212> PRT <213> Artificial Sequence <220> <223> Description of Artificial Sequence: Synthetic sequence <400> 35 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Gln Lys Leu Cys Gln Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr 115 Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys 130 135 <210> 36 <211> 434 <212> DNA <213> Artificial Sequence <220> <223> Description of Artificial Sequence: Synthetic sequence <220> <221> CDS <222> (3)..(425)

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ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc 95 Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys 20 25 30	
gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat 143 Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His 35 40 45	3
tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt 193 Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys 50 55 60	1
cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt tcc His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser 65 70 75	9
aac gcg gcc gac gag gtg gct acc cca gag cag aag ttg tgc caa agg Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Gln Lys Leu Cys Gln Arg 80 85 90 95	7
cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca tgc aag Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys 100 105 110	5
aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc aac tat 383 Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr 115 120 125	3
cgt ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa taggagctc 434 Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys 130 135 140	4
<210> 37 <211> 140 <212> PRT <213> Artificial Sequence	
<220> <223> Description of Artificial Sequence: Synthetic sequence	
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Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu 20 25 30	
Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys 35 40 45	
Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His 50 55 60	

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Gln Lys Leu Cys Gln Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys <210> 38 <211> 485 <212> DNA <213> Artificial Sequence <220> <223> Description of Artificial Sequence: Synthetic sequence <220> <221> CDS <222> (3)..(476) <400> 38 cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt 47 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu 10 ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys 20 25 gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His 35 tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt 191 Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt gct 239 His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ala 65 aac gct gag gaa gct gct gct gct att cct gaa gct tct gaa gaa ctt 287 Asn Ala Glu Glu Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu 80 85 gct caa gaa gaa gct cct gtg tac agt gaa gat cag aag ttg tgc caa 335 Ala Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Gln Lys Leu Cys Gln 100

		agt Ser														383
		cag Gln 130														431
		ttc Phe												taa		476
tag	gagc	tc														485
<21 <21 <21 <22	0> 3> D	57	ipti		_		cial	Seq	ience	e: Sy	ynth€	∍tic				
	0> 3 Val	9 Asn	Arg	Ser	Val	Ala	Phe	Ser	Ala	Phe	Val	Leu	Ile	Leu	Phe	
1				5					10					15		
Val	Leu	Ala	Ile 20	Ser	Asp	Ile	Ala	Ser 25	Val	Ser	Gly	Glu	Leu 30	Cys	Glu	
Lys	Ala	Ser 35	Lys	Thr	Trp	Ser	Gly 40	Asn	Cys	Gly	Asn	Thr 45	Gly	His	Cys	
Asp	Asn 50	Gln	Cys	Lys	Ser	Trp 55	Glu	Gly	Ala	Ala	His 60	Gly	Ala	Cys	His	
Val 65	Arg	Asn	Gly	Lys	His 70	Met	Cys	Phe	Cys	Tyr 75	Phe	Asn	Cys	Ala	Asn 80	
Ala	Glu	Glu		Ala 85				Pro			Ser	Glu	Glu	Leu 95	Ala	
Gln	Glu	Glu	Ala 100	Pro	Val	Tyr	Ser	Glu 105	Asp	Gln	Lys	Leu	Cys 110	Gln	Arg	
Pro	Ser	Arg 115	Thr	Trp	Ser	Gly	Val 120	Cys	Gly	Asn	Asn	Asn 125	Ala	Cys	Lys	
Asn	Gln 130	Cys	Ile	Arg	Leu	Glu 135	Lys	Ala	Arg	His	Gly 140	Ser	Cys	Asn	Tyr	
Arg 145	Phe	Pro	Ala	His	Lys 150	Cys	Ile	Cys	Tyr	Phe 155	Pro	Cys				

<210> 40 <211> 1093 <212> DNA <213> Artificial Sequence

<220> <223> Description of Artificial Sequence: Syr sequence	nthetic
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ttc gtg ctc gcc atc tca gat atc gca tcc gtt a Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val S 20 25	
gag aaa gct agc aag acg tgg tcg ggc aac tgt g Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys G 35	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
tgt gac aac caa tgt aaa tca tgg gag ggt gcg g Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala A 50 55	
cat gtg cgt aac ggg aaa cac atg tgt ttc tgt t His Val Arg Asn Gly Lys His Met Cys Phe Cys T 65 70	
aac gct gag gaa gct gct gct gct att cct gaa g Asn Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu A 80 85 90	
gct caa gaa gaa gct cct gtg tac agt gaa gat c Ala Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp G 100 105	
agg cca agt cgt aca tgg tca gga gtc tgt gga a Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly A 115	
aag aat cag tgc att aga ctt gag aaa gca cga c Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg H 130	at gga tct tgc aac 431 is Gly Ser Cys Asn 140
tat cgt ttc cca gct cac aag tgt atc tgc tac t Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr P 145 150 1	tc cct tgt gcg aat 479 he Pro Cys Ala Asn 55
gct gaa gaa gct gct gct gct att cct gaa gct t Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala S 160 165 170	
caa gaa gaa gca ccg gtt tac tct gaa gat gac g Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Asp G 180	
gac gtg cca tcc gga acc tgg tcc gga cac tgc g Asp Val Pro Ser Gly Thr Trp Ser Gly His Cys G 195 200	

										ttc Phe						671
_								_	_	ttc Phe	_	_			_	719
gct Ala 240	aac Asn	gct Ala	gag Glu	gaa Glu	gct Ala 245	gct Ala	gct Ala	gct Ala	att Ile	cct Pro 250	gaa Glu	gct Ala	tct Ser	gaa Glu	gaa Glu 255	767
										gaa Glu						815
										gtg Val						863
agg Arg	gca Ala	cca Pro 290	atc Ile	gcc Ala	cca Pro	tgc Cys	tgc Cys 295	aga Arg	gcc Ala	ctg Leu	aac Asn	gat Asp 300	cta Leu	cgg Arg	ttt Phe	911
gtg Val	aat Asn 305	act Thr	aga Arg	aac Asn	cta Leu	cga Arg 310	cgt Arg	gct Ala	gca Ala	tgc Cys	cgc Arg 315	tgc Cys	ctc Leu	gta Val	ggg	959
gta Val 320	gtg Val	aac Asn	cgg Arg	aac Asn	ccc Pro 325	ggt Gly	ctg Leu	aga Arg	cga Arg	aac Asn 330	cct Pro	aga Arg	ttt Phe	cag Gln	aac Asn 335	1007
										cgt Arg						1055
cca Pro		Ile							taa	taga	gctc	!				1093
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<220 <223	> De	scri; quen		n of	Art	ific	ial	Sequ	ence	: Sy	nthe	tic				

<400> 41

Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe 1

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu 20

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys 40

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ala Asn Ala Glu Glu Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu Ala Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Gln Lys Leu Cys Gln Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys Ala Asn Ala Glu Glu Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu Ala Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Asp Gly Val Lys Leu Cys Asp Val Pro Ser Gly Thr Trp Ser Gly His Cys Gly Ser Ser Ser Lys Cys Ser Gln Gln Cys Lys Asp Arg Glu His Phe Ala Tyr Gly Gly Ala Cys His Tyr Gln Phe Pro Ser Val Lys Cys Phe Cys Lys Arg Gln Cys Ala Asn Ala Glu Glu Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu Ala Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Gln Asn Ile Cys Pro Arg Val Asn Arg Ile Val Thr Pro Cys Val Ala Tyr Gly Leu Gly Arg Ala Pro Ile Ala Pro Cys Cys Arg Ala Leu Asn Asp Leu Arg Phe Val Asn Thr Arg Asn Leu Arg Arg Ala Ala Cys Arg Cys Leu Val Gly Val Val Asn Arg Asn Pro Gly Leu Arg Arg Asn Pro Arg Phe Gln Asn Ile Pro Arg Asp Cys Arg Asn Thr Phe Val Arg Pro Phe Trp Trp Arg Pro 345 Arg Ile Gln Cys Gly Arg Ile Asn

<210> 42 <211> 485 <212> DNA <213> Artificial Sequence	
<220> <223> Description of Artificial Sequence: Synthetic sequence	
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ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys 20 25 30	95
gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His 35 40 45	143
tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys 50 55 60	191
cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt aaa His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Lys 65 70 75	239
aaa gcc gaa aag ctt gct caa gac aaa ctt aaa gcc gaa caa ctc atc Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu Ile 80 85 90 95	287
gga aag agg atc gga aag agg atc gga aag agg cag aag ttg tgc caa Gly Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg Gln Lys Leu Cys Gln 100 105 110	335
agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca tgc Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys 115 120 125	383
aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc aac Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn 130 135 140	431
tat cgt ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys 145 150 155	476
taggagete	485

<210> 43 <211> 157 <212> PRT <213> Artificial Sequence <223> Description of Artificial Sequence: Synthetic sequence Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu Ile Gly Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg Gln Lys Leu Cys Gln Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys 120 Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr 135 Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys 150

<210> 44
<211> 557
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic sequence
<220>
<221> CDS
<221> CDS
<222> (3)..(548)

<400> 44
cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
1 5 10 15

		ctc Leu														95
		gct Ala														143
		aac Asn 50														191
		cgt Arg					_	_		-				_		239
	_	gaa Glu			_		_				-	_			_	287
	_	aaa Lys			_		_		_	_	-	_	-			335
_		aac Asn	_	_		_			-				_			383
		agg Arg 130														431
_	_	gga Gly				_	_	_		_	_		_			479
		cga Arg														527
		tac Tyr				taa	tago	gagct	c							557

<210> 45

<211> 181

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 sequence

<400> 45

Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe $1 \hspace{1cm} 5 \hspace{1cm} 10 \hspace{1cm} 15$

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu Ala Gln Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala Lys Lys Val Val 105 Pro Asn Val Glu His Pro Ile Gly Lys Arg Ile Gly Lys Arg Ile Gly 120 Lys Arg Gln Lys Leu Cys Gln Arg Pro Ser Arg Thr Trp Ser Gly Val 135 Cys Gly Asn Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys 155 Ala Arg His Gly Ser Cys Asn Tyr Arg Phe Pro Ala His Lys Cys Ile 170 Cys Tyr Phe Pro Cys 180 <210> 46 <211> 485 <212> DNA <213> Artificial Sequence <223> Description of Artificial Sequence: Synthetic sequence <220> <221> CDS <222> (3)..(476) <400> 46 cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt 47 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc 95 Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys gag aaa get age aag aeg tgg teg gge aac tgt gge aac aeg gga eat 143 Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys

cat His	gtg Val 65	cgt Arg	aac Asn	ggg	aaa Lys	cac His 70	atg Met	tgt Cys	ttc Phe	tgt Cys	tac Tyr 75	ttc Phe	aat Asn	tgt Cys	gcc Ala	239
	act Thr															287
	aag Lys															335
	cca Pro															383
-	aat Asn	_	_		_				-	-				_		431
	ctg Leu 145			_		_			_				_	taa		476
tago	gagct	c														485
<21	0> 4 ⁻ 1> 15 2> PF	57														
<213	3> Ai 0> 3> De	rtifi	ptic				cial	Sequ	ience	e: S)	/nthe	etic				
<213 <220 <223 <400	3> Ai 0> 3> De	stifi escri equer	iptic	on of	- E Art	cific							Ile	Leu 15	Phe	
<213 <220 <223 <400 Met	3> A ₁ 0> 3> De se	rtifi escri equer / Asn	iptic nce Arg	Ser 5 Ser	f Art Val	aific Ala Ile	Phe Ala	Ser	Ala 10 Val	Phe	Val Gly	Leu	Leu	15 Cys		
<21: <220 <22: <400 Met 1 Val	3> Ai 0> 3> De se 0> 47 Val	escri equer Asn Ala	Arg Ile 20	Ser 5 Ser	f Art Val Asp	aific Ala Ile	Phe Ala	Ser Ser 25	Ala 10 Val	Phe	Val Gly	Leu Glu	Leu 30	15 Cys	Glu	
<213 <220 <400 Met 1 Val	3> Ai 0> 3> De 5e 0> 47 Val	escri equer Asn Ala Ser 35	Arg Ile 20 Lys	Ser 5 Ser Thr	Val Asp	Ala Ile Ser	Phe Ala Gly 40	Ser Ser 25 Asn	Ala 10 Val Cys	Phe Ser Gly	Val Gly Asn	Leu Glu Thr 45	Leu 30 Gly	15 Cys His	Glu Cys	
<213 <220 <400 Met 1 Val Lys	3> An 0> 3> De 5e 0> 47 Val Leu Ala Asn	escriequer Asn Ala Ser 35	Arg Ile 20 Lys	Ser 5 Ser Thr	Val Asp Trp Ser	Ala Ile Ser Trp 55	Phe Ala Gly 40 Glu	Ser Ser 25 Asn	Ala 10 Val Cys Ala	Phe Ser Gly Ala	Val Gly Asn His 60	Leu Glu Thr 45 Gly	Leu 30 Gly Ala	15 Cys His Cys	Glu Cys His	
<213 <220 <400 Met 1 Val Lys Asp Val 65	3> An 0> 3> De 50 Val Leu Ala Asn 50	escriequer Asn Ala Ser 35 Gln Asn	Arg Ile 20 Lys Cys	Ser 5 Ser Thr Lys	Val Asp Trp Ser His	Ala Ile Ser Trp 55 Met	Phe Ala Gly 40 Glu Cys	Ser Ser 25 Asn Gly	Ala 10 Val Cys Ala	Phe Ser Gly Ala Tyr 75	Val Gly Asn His 60 Phe	Leu Glu Thr 45 Gly Asn	Leu 30 Gly Ala Cys	15 Cys His Cys Ala	Glu Cys His Ser 80	
<213 <220 <400 Met 1 Val Lys Asp Val 65 Thr	3> An 0> 3> De se 0> 47 Val Leu Ala Asn 50 Arg	escriequer Asn Ala Ser 35 Gln Asn	Arg Ile 20 Lys Cys Gly Asp	Ser 5 Ser Thr Lys Lys	Val Asp Trp Ser His 70	Ala Ile Ser Trp 55 Met	Phe Ala Gly 40 Glu Cys Asp	Ser Ser 25 Asn Gly Phe Val	Ala 10 Val Cys Ala Cys	Phe Ser Gly Ala Tyr 75 Ala	Val Gly Asn His 60 Phe	Leu Glu Thr 45 Gly Asn Lys	Leu 30 Gly Ala Cys	15 Cys His Cys Ala Ile 95	Glu Cys His Ser 80 Gly	

Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr 130 135 140

Leu Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys 145 150 155

<210> 48 <211> 488 <212> DNA <213> Artificial Sequence <220> <223> Description of Artificial Sequence: Synthetic sequence <220> <221> CDS <222> (3)..(479) <400> 48 cc atq gtq aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt 47 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys 20 qaq aaa qct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His 35 tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt 191 Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys 50 cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt tcc 239 His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser 65 aac gcg gcc gac gag gtg gct acc cag ctg ttg aat ttt gac ctt ctt Asn Ala Ala Asp Glu Val Ala Thr Gln Leu Leu Asn Phe Asp Leu Leu 80 85 aag ctt geg gga gac gtc gag tcc aac cct ggg ccc cag aag ttg tgc 335 Lys Leu Ala Gly Asp Val Glu Ser Asn Pro Gly Pro Gln Lys Leu Cys 100 105 caa agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca 383 Gln Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala 120 tgc aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc 431 Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys 130 135

aac tat cgt ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa 479
Asn Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
145 150 155

taggagctc 488

<210> 49

<211> 158

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 sequence

<400> 49

Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe 1 5 10 15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu 20 25 30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
35 40 45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His 50 55 60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser Asn 65 70 75 80

Ala Ala Asp Glu Val Ala Thr Gln Leu Leu Asn Phe Asp Leu Leu Lys 85 90 95

Leu Ala Gly Asp Val Glu Ser Asn Pro Gly Pro Gln Lys Leu Cys Gln
100 105 110

Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys 115 120 125

Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn 130 135

Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys 145 150 155

<210> 50

<211> 575

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 sequence

<220>

<221> CDS

<222> (3)..(566)

Me	50 g gtg t Val	aat (Asn <i>i</i>	cgg f Arg S	tcg « Ser ¹ 5	gtt (Val /	gcg Ala	ttc t	tcc (Ser /	gcg t Ala 1	ttc (Phe '	gtt o Val 1	ctg a Leu i	atc ([le]	ett Leu 15	47
ttc g	tg ctc al Leu	gcc Ala	atc Ile 20	tca Ser	gat Asp	atc Ile	gca Ala	tcc Ser 25	gtt Val	agt Ser	gga Gly	gaa Glu	cta Leu .30	tgc Cys	95
gag a	aa gct ys Ala	agc Ser 35	aag Lys	acg Thr	tgg Trp	tcg Ser	ggc Gly 40	aac Asn	tgt Cys	ggc Gly	aac Asn	acg Thr 45	gga Gly	cat His	143
tgt g Cys A	ac aac sp Asn 50	Gln	tgt Cys	aaa Lys	tca Ser	tgg Trp 55	gag Glu	ggt Gly	gcg Ala	gct Ala	cac His 60	gga Gly	gcg Ala	tgt Cys	191
His V	tg cgt al Arg 65	aac Asn	ggg Gly	aaa Lys	cac His 70	atg Met	tgt Cys	ttc Phe	tgt Cys	tac Tyr 75	ttc Phe	aat Asn	tgt Cys	tcc Ser	239
aac g Asn A 80	geg gee Ala Ala	gac Asp	gag Glu	gtg Val 85	gct Ala	acc Thr	cag Gln	ctg Leu	ttg Leu 90	aat Asn	ttt Phe	gac Asp	ctt Leu	ctt Leu 95	287
	tt gcg eu Ala														335
	cc atc er Ile		_												383
	aa gca lu Ala 130														431
Ser A	gt aca rg Thr 45														479
	gc att ys Ile														527
	ca gct ro Ala		_	_		_				_	taa	tag	gagct	cc	575

<210> 51

<211> 187

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic sequence

| Ala | Ala | Asp | Sap | Val | Ala | Phe | Sap | Ala | Sap | Sap

Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr Arg Phe 165 170 175

Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys 180 185

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<211> 24

<212> DNA

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<223> Description of Artificial Sequence:
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<220>

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<100\ F2	
<400> 52 carttraant ancanaaarc acat	24
Cartifant ancanadare acat	2.1
.010. 52	
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<213> Dahlia merckii	
ALION BANILLA MOLONILL	
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Met Cys Phe Cys Tyr Phe Asn Cys 1 5	
•	
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Oligonucleotide	
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tcgccatctc agatatcgca tccgttagtg gagaactatg cgagaaa
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<211> 37
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<223> Description of Artificial Sequence: Primer
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                                                                    34
<210> 60
<211> 89
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gcctttggca caacttctgt cctggctcca cgtcctctgg ggtagccacc tcgtcagcag 60
cgttggaaca attgaagtaa cagaaacac
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ttagagctcc tattaacaag gaaagtagc
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<210> 62
<211> 55
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Lys Asp Glu Leu
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Ile Gly Lys Arg
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<211> 20
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aggaagttca tttcatttgg
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<400> 69
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Asp Val Glu Pro Gly Gln Lys
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Leu Ile Gly Lys Arg Gln Lys
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     C-terminal sequence
<400> 72
Cys Tyr Phe Asn Cys Ser
 1
<210> 73
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Cys Tyr Phe Asn Pro Ser
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Cys Tyr Phe Asn Cys Lys
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Cys Tyr Phe Asn Cys Ala
                   5
<210> 77
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 <400> 77
 Ile Gly Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg
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<211> 6
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Phe Asn Cys Ser Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val
Glu Pro Gly Gln Lys Leu
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Phe Asn Cys Lys Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala
Glu Gln Leu Ile Gly Lys Arg Gln Lys Leu
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       sequence
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Thr Lys Thr Ile Gly Lys Arg Gln Lys Leu 20 25